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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,321	CARLSEN ET AL.	
	Examiner	Art Unit	
	DAVID P. RASHID	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 20 May 2010.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1 and 7-10 is/are rejected.
 7) Claim(s) 2-6 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

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Continued Examination Under 37 C.F.R. § 1.114

[1] A request for continued examination under 37 C.F.R. § 1.114, including the fee set forth in 37 C.F.R. § 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 C.F.R. § 1.114, and the fee set forth in 37 C.F.R. § 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 C.F.R. § 1.114. Applicant's submission filed on May 20, 2010 has been entered.

Amendments & Claim Status

[2] This Detailed Action is responsive to Amendment with RCE ("Amendment") received May 20, 2010. Claims 1-9 remain pending; Claim 10 new.

Claim Rejections - 35 U.S.C. § 112

[3] In response to Amendment at 6, the previous § 112 rejections are withdrawn.

Claim Rejections - 35 U.S.C. § 101

Positive Statement

The specification supports the “image processing device”, as cited in Claims 1-7, 9 and 10, as a computer comprising memory and a central processing unit (or image processor).

The specification supports the “computer-readable device”, as cited in Claim 9, as a computer that holds both memory and a program to cause a processor to perform the method-steps.

Claim Rejections - 35 U.S.C. § 102

[4] The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Remarks Moot

[5] Amendment at 6-7 regarding rejected Claims 1 and 7-9 under 35 U.S.C. § 102(b) as being as being anticipated by Moshfeghi, U.S. Pat. No. 5,633,951 have been respectfully and fully considered, but are now moot in view of the new grounds of rejection.

Erdem

[6] **Claims 1 and 8-10** are rejected under 35 U.S.C. § 102(b) as being anticipated by Erdem et al., U.S. Pat. No. 5,982,909 (“Erdem”).

Regarding **Claim 1**, Erdem discloses a method (fig. 20) of registering a first image (“reference mesh” at 4:1-12; e.g., fig. 20a, node item 21) and a second image (e.g., fig. 20b, node item 121), the method comprising the steps of:

selecting, by an image processing device (fig. 1, item 2), at least one first landmark (e.g., the middle point in fig. 20a, node item 21) in the first image;

selecting, by an image processing device (fig. 1, item 2), at least one second landmark (e.g., the middle point in fig. 20b, node item 121) in the second image, wherein the at least one first landmark corresponds to the at least one second landmark (the middle points of both node items 21 and 121 correspond); and

registering, by an image processing device (fig. 1, item 2), the first and second images by using a similarity value (fig. 2, item 50; e.g., the “MAD or MSE value is registered” at 11:5-23) which relates to a similarity of a first region (a triangle block in fig. 20a, node item 21) determined by the at least one first landmark (the middle point in fig. 20a, node item 21) and a second region (a triangle block in fig. 20b, node item 121) in the second image determined by the at least one second landmark (the middle point in fig. 20b, node item 121),

the registering including selecting at least one further first landmark (“new inside and boundary nodes” at 17:40-67; any node of figs. 20c,d not included in fig. 20a) in the first image (fig. 20a, node item 21) and at least one further second landmark (“new inside and boundary nodes” at 17:40-67; any node of figs. 20c,d not included in fig. 20b) in the second image (fig. 20b, node item 121) as a function of a pre-selected value (fig. 2, item 50; the MAD/MSE registration is performed again at fig. 20d for the higher resolution and new nodes) of the similarity value (the “MAD or MSE value is registered” at 11:5-23).

Regarding **Claim 8**, Claim 1 cites identical features as in Claim 8, including a memory (fig. 1, item 2) for storing the first image and the second image; and an image processor (fig. 1, item 2) for registering the first image and the second image; wherein the image processor is adapted to perform the method-steps of Claim 1. Thus, references/arguments equivalent to those presented above for Claim 1 are equally applicable to Claim 8.

Regarding **Claim 9**, Claim 1 cites identical features as in Claim 9, including a computer program (“software programs” at 3:10-37) on a computer-readable device (fig. 1, item 2) for registering a first and a second image, wherein the computer program causes a processor (fig. 1, item 2) to perform the method-steps of claim 1 when the computer program is executed on the processor. Thus, references/arguments equivalent to those presented above for Claim 1 are equally applicable to Claim 8.

Regarding **Claim 10**, Erdem discloses wherein the selecting the at least one further first landmark (“new inside and boundary nodes” at 17:40-67; any node of figs. 20c,d not included in fig. 20a) in the first image and the at least one further second landmark (“new inside and boundary nodes” at 17:40-67; any node of figs. 20c,d not included in fig. 20b) in the second image is based on the similarity value (the “MAD or MSE value is registered” at 11:5-23) not exceeding the pre-selected value (fig. 2, item 50; the MAD/MSE registration is performed again at fig. 20d for the higher resolution and new nodes).

Claim Rejections - 35 U.S.C. § 103

[7] The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Erdem in view of Moshfeghi

[8] **Claim 7** is rejected under § 103(a) as being unpatentable over Erdem in view of Moshfeghi, U.S. Pat. No. 5,633,951.

Regarding **Claim 7**, Erdem does not disclose wherein the method is applied in medical imaging to one of CT data sets, MRI data sets, PET data sets, SPECT data sets, and ultrasonic imaging data sets.

Moshfeghi teaches registration of elastic volumetric images by matching surfaces (2:46-56; e.g., fig. 4) that includes applying in medical imaging to one of CT data sets, MRI data sets, PET data sets, SPECT data sets, and ultrasonic imaging data sets (4:9-37).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Erdem to be applied in medical imaging to one of CT data sets, MRI data sets, PET data sets, SPECT data sets, and ultrasonic imaging data sets as taught by Moshfeghi “to entirely automate the entire contour extraction process using built in knowledge of the anatomy of the body region scanned, the present best mode of implementing the contour extraction process involves user interaction.” Moshfeghi at 5:36-51.

Allowable Subject Matter

[9] **Claims 2-7** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Reasons for Indicating Allowable Subject Matter

[10] The following is a statement of reasons for the indication of allowable subject matter:

Regarding **Claim 2**, while the prior art of record teaches claim 1, the prior art of record does not teach wherein the second number is the first number plus one; wherein the first and second landmarks are selected in accordance with a qualifying function, and wherein the third number is equal to the second number.

Conclusion

Citation of Pertinent Prior Art

[11] The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: US 5581308 A; US 5623560 A; and US 6664956 B1.

[12] Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID P. RASHID whose telephone number is (571)270-1578 and fax number (571)270-2578. The examiner can normally be reached Monday - Friday 7:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-74537453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 26244